CLAIMS:

1. A method for inspecting a photolithographically processed wafer, comprising the steps of:

determining a first image signature of a golden wafer using a first lamp at a first intensity;

determining a second image signature of the processed wafer using a second lamp at a second intensity;

adjusting the first image signature based on a difference between the first intensity and the second intensity to generate an adjusted golden wafer signature; and

generating a defect confidence value by comparing the second image signature with the adjusted golden wafer signature.

2. The method according to claim 1, wherein the first image signature and the second image signature are each a RGB signature.

3. The method according to claim 2, wherein each of the first image signature and the second image signature has a respective red value, green value, and blue value.

4. The method according to claim 3, wherein the difference is substantially equal to the respective green value of the second image signature subtracted from the respective green value of the first image signature.

5. The method according to claim 4, further comprising the steps of:

determining a respective RGB signature of the golden wafer at each of a plurality of different setting values using the first lamp;

calculating a red slope corresponding to a change in the respective red values as compared to a change in the setting values;

calculating a green slope corresponding to a change in the respective green values as compared to a change in the setting values; and

calculating a blue slope corresponding to a change in the respective blue values as compared to a change in the setting values.

6. The method according to claim 5, further comprising the steps of:

normalizing the red slope with respect to the green slope to generate a red adjustment factor; and

normalizing the blue slope with respect to the green slope to generate a blue adjustment factor.

7. The method according to claim 6, wherein the step of adjusting further includes the steps of:

adjusting the respective red value of the first image signature based on the difference and the red adjustment factor; and

adjusting the respective blue value of the first image signature based on the difference and the blue adjustment factor.

8. The method according to claim 1, further comprising the step of:

selecting the second intensity based on an inspection recipe.

9. The method according to claim 8, wherein the inspection recipe identifies the first intensity.

10. The method according to claim 9, further comprising the step of:

selecting one of a plurality of different intensity settings for the second lamp that is closest to the first intensity.

11. A method for inspecting a photolithographically processed wafer after a develop step, comprising the steps of:

determining a first RGB signature of a golden wafer using a first lamp at a first intensity;

determining a second RGB signature of the processed wafer using a second lamp at a second intensity;

adjusting the first RGB signature based on a difference between the first intensity and the second intensity to generate an adjusted golden wafer signature; and

generating a defect confidence value by comparing the second RGB signature with the adjusted golden wafer signature.

12. The method according to claim 11, wherein the step of adjusting includes the steps of:

calculating a rate of change in the first RGB signature due to a unit change of lamp intensity; and

calculating an amount to adjust the first RGB signature based on the calculated rate of change and the difference between the first intensity and the second intensity.

13. The method according to claim 11, wherein each RGB signature has a respective red value, green value, and blue value.

14. The method according to claim 13, wherein the difference is substantially equal to the respective green value of the second RGB signature subtracted from the respective green value of the first RGB signature.

15. The method according to claim 14, further comprising the steps of:

determining a respective RGB signature of the golden wafer at each of a plurality of different setting values using the first lamp;

calculating a red slope corresponding to a change in the respective red values as compared to a change in the setting values;

calculating a green slope corresponding to a change in the respective green values as compared to a change in the setting values; and

calculating a blue slope corresponding to a change in the respective blue values as compared to a change in the setting values.

16. The method according to claim 15, further comprising the steps of:

normalizing the red slope with respect to the green slope to generate a red adjustment factor; and

normalizing the blue slope with respect to the green slope to generate a blue adjustment factor.

17. The method according to claim 16, wherein the step of adjusting further includes the steps of:

adjusting the respective red value of the first RGB signature based on the difference and the red adjustment factor; and

adjusting the respective blue value of the first RGB signature based on the difference and the blue adjustment factor.

18. The method according to claim 11, further comprising the step of:

selecting the second intensity based on an inspection recipe.

19. The method according to claim 18, wherein the inspection recipe identifies the first intensity.

20. The method according to claim 19, further comprising the step of:

selecting one of a plurality of different intensity settings for the second lamp that is closest to the first intensity.

21. An after develop inspection system, comprising:

a first memory storing a first image signature of a golden wafer acquired with a first lamp at a first intensity;

an after develop inspection tool selectably controllable to capture a second image signature of a test wafer at a second intensity using a second lamp;

an image signature adjuster, in communication with the first memory, configured to generate an adjusted golden wafer signature by adjusting the first image signature based on a difference between the first intensity and the second intensity; and

a defect analyzer, in communication with the after develop inspection tool and the image signature adjuster, configured to compare the second image signature with the adjusted golden wafer signature.

22. The system according to claim 21, further comprising:

a signature adjustment value, stored in the first memory, said signature adjustment value indicating an amount the first image signature changes as a result of a unit change of the first intensity.

23. The system according to claim 22, wherein the first image signature and the second image signature are each RGB signatures.

24. The system according to claim 23, wherein the signature adjustment value includes a separate red value, green value, and blue value.

25. The system according to claim 21, further comprising:

a programmable computer in communication with the first memory and the after develop inspection tool, and configured to control operation of the after develop inspection tool.

26. The system according to claim 25, further comprising:

an inspection recipe executable by the programmable computer and specifying the first intensity.

27. The system according to claim 26. wherein the programmable computer is further configured to select one of a plurality of different intensity settings for the second lamp that is closest to the first intensity.

28. A method for calibrating an after-develop inspection tool, comprising the steps of:

determining a first image signature of a golden wafer using a first image detector and a first lamp at a first intensity;

determining a second image signature of the golden wafer using a second image detector and a second lamp at a second intensity;

adjusting the first image signature based on a difference between the first intensity and the second intensity to generate an adjusted golden wafer signature; and

based on the adjusted golden wafer signature, calculating an adjustment factor by which to change a gain level setting of the second image detector.

29. The method according to claim 28, further comprising the step of:

adjusting the gain level setting of the second image detector by the adjustment factor.

30. The method according to claim 28, further comprising the step of:

adjusting the gain level setting of the second image detector so that a subsequent image signature of the golden wafer using the second image detector is substantially equal to the adjusted golden wafer signature.

31. The method according to claim 28, wherein each of the first image signature and the second image signature has a respective red value, green value, and blue value.

32. The method according to claim 31, wherein the difference is substantially equal to the respective green value of the second image signature subtracted from the respective green value of the first image signature.

33. The method according to claim 32, further comprising the steps of:

determining a respective RGB signature of the golden wafer at each of a plurality of different intensity-setting values using the first image detector and the first lamp;

calculating a red slope corresponding to a change in the respective red values as compared to a change in the intensity-setting values;

calculating a green slope corresponding to a change in the respective green values as compared to a change in the intensity-setting values; and

calculating a blue slope corresponding to a change in the respective blue values as compared to a change in the intensity-setting values.

34. The method according to claim 33 further comprising the steps of:

normalizing the red slope with respect to the green slope to generate a red adjustment factor; and

normalizing the blue slope with respect to the green slope to generate a blue adjustment factor.

35. The method according to claim 34, wherein the step of adjusting further includes the steps of:

adjusting the respective red value of the first image signature based on the difference and the red adjustment factor; and

adjusting the respective blue value of the first image signature based on the difference and the blue adjustment factor.

36. The method according to claim 28, further comprising the step of:

selecting one of a plurality of different intensity settings for the second lamp that is closest to the first intensity.

37. An after develop inspection system, comprising:

a first memory storing a first image signature of a golden wafer acquired with a first detector and a first lamp at a first intensity;

an after develop inspection tool selectably controllable to capture a second image signature of the golden wafer at a second intensity using a second detector and a second lamp;

an image signature adjuster, in communication with the first memory, configured to generate an adjusted golden wafer signature by adjusting the first image signature based on a difference between the first intensity and the second intensity; and

a tool-matching analyzer, in communication with the after develop inspection tool and the image signature adjuster, configured to compare the second image signature with the adjusted golden wafer signature to calculate a gain level adjustment factor for the second detector.

38. The system according to claim 37, wherein the detector further comprises:

a first gain control configured to adjust a red-detector gain setting;

a second gain control configured to adjust a green-detector gain setting; and

a third gain control configured to adjust a blue-detector gain setting.

39. A computer readable medium bearing instructions for inspecting a photolithographically processed wafer, said instructions being arranged to cause one or more processors upon execution thereof to perform the steps of:

determining a first image signature of a golden wafer using a first lamp at a first intensity;

determining a second image signature of the processed wafer using a second lamp at a second intensity;

adjusting the first image signature based on a difference between the first intensity and the second intensity to generate an adjusted golden wafer signature; and

generating a defect confidence value by comparing the second image signature with the adjusted golden wafer signature.

40. A computer readable medium bearing instructions for inspecting a photolithographically processed wafer, said instructions being arranged to cause one or more processors upon execution thereof to perform the steps of:

determining a first RGB signature of a golden wafer using a first lamp at a first intensity;

determining a second RGB signature of the processed wafer using a second lamp at a second intensity;

adjusting the first RGB signature based on a difference between the first intensity and the second intensity to generate an adjusted golden wafer signature; and

generating a defect confidence value by comparing the second RGB signature with the adjusted golden wafer signature.

41. A computer readable medium bearing instructions for calibrating an after-develop inspection tool, said instructions being arranged to cause one or more processors upon execution thereof to perform the steps of:

determining a first image signature of a golden wafer using a first image detector and a first lamp at a first intensity;

determining a second image signature of the golden wafer using a second image detector and a second lamp at a second intensity;

adjusting the first image signature based on a difference between the first intensity and the second intensity to generate an adjusted golden wafer signature; and

based on the adjusted golden wafer signature, calculating an adjustment factor by which to change a gain level setting of the second image detector.